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to suffer from a want of recreation and lack of sleep.

The problem before the western institution is quite different from that which confronts the older eastern institutions. The western institutions are in a state of flux and developing with the country. They are dependent upon the legislatures for part of their income. The legislatures are, as a rule, generous, but frequently the funds available for appropriation are not sufficient to meet all demands and some one must suffer. The difficulty of finance is one not characteristic of western institutions but nation wide. It thus happens that funds for investigation requiring elaborate apparatus and equipment are not always available. Such conditions can not be laid at the door of the administration which, as a rule, does the very best it can under given conditions.

Considerable space was devoted to the prominence of extension work and the popular place it occupies in the institutions' activity. It is true that extension work occupies an important position, but in no sense does it overshadow the research worker. The two go rather hand in hand. The extension lecturer should be a man possessing the research spirit if his extension work is to be of any educational value. Extension work is a legitimate function of a university in that it extends the truth, for no amount of exploration for truth is worth the effort it costs but extension be the ultimate end.

Undoubtedly your correspondent's case is a bona fide one, but to assert that such conditions which he cites are characteristic of our western institutions is fallacious. There are unquestionably institutions of the character he describes but they are not localized in any particular section of the country. No man need affiliate himself with such an institution, for the report of the Federal Educational Commission and other literature should give some evidence in one way or another of such a condition.

Our western institutions can not entirely disregard the research spirit, for they are looking towards a wider recognition in the educa-

tional world; and such recognition can come only from the attainments of the individuals composing the teaching staff. To suppress the spirit of original investigation is to cast them into utter oblivion in the field of higher education.

The thing with which I particularly wish to take issue in your correspondent's letter is the statement that research is impossible in the western university. The thing which I wish to emphasize is that no such condition is characteristic of the western institution, that sporadic cases do exist I do not deny, but such cases are not confined to the west but are scattered nation wide.

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#### SCIENTIFIC BOOKS

*The Determination of Sex.* By L. DONCASTER, Cambridge University Press, 1914. New York, G. P. Putnam's Sons.

Professor Doncaster's book gives a popular account of recent work on sex determination, avoiding as far as possible technicalities which might embarrass the untrained reader. The author has succeeded in his difficult task of presenting a considerable body of matter, much of it controversial, to a general audience. He points out that determination of sex means not the control of sex (*i. e.*, the production of sex at will) but the study of the causes that lead to the appearance of males and females. "We may discover the causes of storms or earthquakes, and when our knowledge of them is sufficiently advanced we may be able to predict them as successfully as astronomers predict eclipses, but there is little hope that we shall ever be able to control them."

Doncaster is not a little concerned that the use of the word cause in connection with sex determination be clearly understood. A factor *A* may be invariably followed by a condition *E*, but between the two there may be a chain of events *B*, *C*, *D*. Should *B* or *C* or *D* be produced in some other way this would also lead to *E*. Similarly for sex, a female results when certain conditions are realized in the egg, a male when other conditions prevail. This general philosophical point of view will,

of course, be readily conceded as an article of broadmindedness; meanwhile we must wait for a specific case where it can be shown that males and females may be turned out in these different ways. For, while no one doubts that such things as blue flowers, let us say, may be due to different pigments that go back in origin to different factors, yet so far as known to the reviewer there is no case in the whole Mendelian literature where it has been *proved* that the same (not merely similar) product is the result of different factors.

A somewhat similar question comes up in connection with certain attempts that have been made to account for departures in the sex ratio on the basis that the sex factor has become "weakened." The result would lead to complete mix-up of the chromosome relations and would lead to chaos in subsequent generations if the same kind of "weakness" kept up. In contrast to such speculations the relative constancy of the chromosome number must appear an impressive fact. Doncaster himself, while lending a sympathetic ear to those who find difficulties in applying the chromosome interpretation to sex determination, takes in general the stand with which most of us will heartily agree, namely, to hold fast to what has been most clearly demonstrated and not let the fact that there are still unsolved problems confuse the issue. Progress in the difficult field of biological research seems to start from those points where the situation is clear. The ever-present attempts of the obscurantist to befog the issue by over emphasizing what is not understood is a procedure too familiar to call for more than passing comment. Doncaster's book will therefore serve to give balance to the situation that is "developing normally."

There are few minor points in the book that call for comment. The author has, on the whole, most judiciously assigned special discoveries to their authors without overburdening the text with names. The omission of Stevens's name on page 63 in connection with the discovery of the XY chromosomes in relation to sex determination is an oversight, but some fuller mention might have been ex-

pected in connection with the history of these chromosomes when much less important matters receive their historical setting.

T. H. MORGAN

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*The Butterfly Guide*: a Pocket Manual for the Ready Identification of the Commoner Species found in the United States and Canada. By W. J. HOLLAND, LL.D.  $3\frac{1}{2} \times 5\frac{3}{4}$  inches; pp. 237; 295 figures in color. Doubleday, Page & Co. Cloth. \$1.

Any guide book to the identification of 255 species of butterflies, that contains 295 finely colored figures, that costs only a dollar and actually does go into a vest pocket, may truthfully be called a great little book. This, in a few words, is a fair description of Dr. W. J. Holland's "Butterfly Guide." Apparently it is the first of its kind, and also the last word (and picture) in butterfly books for availability in the field and home.

The thirty-thousand-copy success of Dr. Holland's original "Butterfly Book" may justly be regarded as the inspiration for the present elegant booklet; and the author's point is well taken. This manual is built on the same general lines as Chester A. Reed's Pocket Bird Guide Series, and the "Birds of New Jersey." True enough, these volumes are none of them "reading books," and in the business of furnishing means to ends in identifying species they stick closely to their trails.

The purpose of this almost bewildering array of colored butterfly pictures is to promote identification of strange species, literally in a moment; and right well do they serve their purpose. Remembering as we do the breezy and rare freshness of the author's literary style, the only regret about this volume is that it does not and can not furnish room for unlimited Hollandesque gossip and disquisition on the more interesting species.

W. T. H.

#### SPECIAL ARTICLES

##### A NEW DISEASE OF GERMINATING WHEAT

WHILE examining some wheat fields on April 16 of this year it was noted that there was a